AUTHORIZING LEGISLATION

UNIVERSITY OF MICHIGAN
MAY 16 1956
MAIN READING ROOM

HEARINGS

BEFORE THE

SUBCOMMITTEE ON LEGISLATION

OF THE

JOINT COMMITTEE ON ATOMIC ENERGY

CONGRESS OF THE UNITED STATES

EIGHTY-FOURTH CONGRESS

SECOND SESSION

ON

AUTHORIZING LEGISLATION

FEBRUARY 17 AND MARCH 27, 1956

Printed for the use of the Joint Committee on Atomic Energy

UNITED STATES
GOVERNMENT PRINTING OFFICE
74015 WASHINGTON : 1956

JOINT COMMITTEE ON ATOMIC ENERGY

CLINTON P. ANDERSON, New Mexico, *Chairman*

CARL T. DURHAM, North Carolina, *Vice Chairman*

RICHARD B. RUSSELL, Georgia
JOHN O. PASTORE, Rhode Island
ALBERT GORE, Tennessee
HENRY M. JACKSON, Washington
BOURKE B. HICKENLOOPER, Iowa
EUGENE D. MILLIKIN, Colorado
WILLIAM F. KNOWLAND, California
JOHN W. BRICKER, Ohio

CHET HOLIFIELD, California
MELVIN PRICE, Illinois
PAUL J. KILDAY, Texas
JOHN J. DEMPSEY, New Mexico
STERLING COLE, New York
CARL HINSHAW, California
JAMES E. VAN ZANDT, Pennsylvania
JAMES T. PATTERSON, Connecticut

SUBCOMMITTEE ON LEGISLATION

CHET HOLIFIELD, California, *Chairman*

CARL T. DURHAM, North Carolina
PAUL J. KILDAY, Texas
STERLING COLE, New York

ALBERT GORE, Tennessee
BOURKE B. HICKENLOOPER, Iowa
EUGENE D. MILLIKIN, Colorado

UNITED STATES OF AMERICA
DEPOSITED BY THE

CONTENTS

	Page
Statements of Dr. Willard F. Libby, Commissioner; K. E. Fields, General Manager; Gen. A. D. Starbird, Director, Division of Military Application; Jesse C. Johnson, Director, Division of Raw Materials; E. J. Bloch, Director, Division of Production; Oscar S. Smith, Director of Organization and Personnel; W. Kenneth Davis, Director, Division of Reactor Development; John A. Derry, Director, Division of Construction and Supply; A Tammaro, Assistant General Manager for Research and Industrial Development; D. F. Shaw, Assistant General Manager for Manufacturing; Don S. Burrows, Controller; accompanied by Dr. T. H. Johnson, Director, Division of Research; Dr. C. L. Dunham, Director, Division of Biology and Medicine; William Mitchell, General Counsel; Francis J. McCarthy, Assistant Controller for Budgets; James A. Miller, deputy budget officer; Wiliam Wampler, Congressional Liaison Officer, and Charles A. Perry, Congressional Liaison Officer, all of the United States Atomic Energy Commission	1, 31
Appendix	35

AUTHORIZING LEGISLATION[1]

FRIDAY, FEBRUARY 17, 1956

CONGRESS OF THE UNITED STATES,
JOINT COMMITTEE ON ATOMIC ENERGY,
SUBCOMMITTEE ON LEGISLATION,
Washington, D. C.

The Subcommittee on Legislation met, pursuant to call, at 2 p. m. in the committee room, the Capitol, Hon. Chet Holifield (chairman) presiding.

Present were: Representatives Chet Holifield, Melvin Price, Sterling Cole, and James E. Van Zandt.

Members of the committee staff: Mr. Wayne P. Brobeck and George Norris, Jr.

Representatives of the Atomic Energy Commission: Hon. Willard F. Libby, Commissioner; K. E. Fields, General Manager; Gen. A. D. Starbird, Director, Division of Military Application; Jesse C. Johnson, Director, Division of Raw Materials; E. J. Bloch, Director, Division of Production; W. Kenneth Davis, Director, Division of Reactor Development; Dr. T. H. Johnson, Director, Division of Research; Dr. C. L. Dunham, Director, Division of Biology and Medicine; John A. Derry, Director, Division of Construction and Supply; A. Tammaro, Assistant General Manager for Research and Industrial Development; D. F. Shaw, Assistant General Manager for Manufacturing; Don. S. Burrows, Controller; Mr. William Mitchell, General Counsel; Francis J. McCarthy, Assistant Controller for Budgets; James A. Miller, deputy budget officer; and William Wampler, congressional liaison.

Mr. HOLIFIELD. Some of my subcommittee is out of town. Some are going to be a little late so I think we might just as well start getting this on the record.

General Fields, I will make just a short opening statement.

In compliance with section 261 of the Atomic Energy Act of 1954, we are meeting this afternoon with the AEC Commissioners, and the division directors to review the request for authorizing legislation for the AEC's fiscal year 1957 construction budget.

For fiscal year 1957, the Atomic Energy Commission is requesting authorization for the appropriation of $254,200,000 for the purposes of acquisition or condemnation of real property or facilities or for plant or for facility acquisition, construction, or expansion. I understand there have been some minor adjustments or modifications to the

[1] The following hearings were held in executive session, since much of the testimony justifying the various items contained restricted data. As is the usual practice of the Joint Committee, the transcripts of these hearings have been edited and all testimony which contains "restricted data" has been deleted.

individual amounts within the total and perhaps to the overall total as a result of a review made subsequent to the original submission.

It appears that the form and language evolved as a result of the first experience with the section 261 last year proved satisfactory to both the Congress and the Commission.

I say it appears satisfactory because the Commission has proposed this year a draft of an authorizing bill almost identical in form and language to the one passed last year.

To the best of my knowledge the Commission has not indicated that it has been handicapped in any substantial way, in the performance of its duties and responsibilities as a result of the passage of Public Law 141 last year.

Without disrupting your plan of presentation, we would appreciate your giving at some point a brief summary of the experience you have had in doing business under the provisions of Public Law 141. Comments would be particularly welcome on your success in starting the various projects within the 25, 10, and 0 percent deviation groups.

General Fields, do you have a prepared statement that you wish to make first?

Mr. FIELDS. Yes, Mr. Chairman, I do. But before I start I wish to tell you Mr. Murray intended to be here but he has been delayed. He will be here and Dr. Libby will join us in about an hour, I think. He intends to be here.

Mr. HOLIFIELD. We hope they will get here along with the other members of the subcommittee.

Mr. FIELDS. In opening, Mr. Chairman, I want to express our thanks to the committee for scheduling consideration of this authorizing legislation at an early date. This year we hope to present both our operating budget and our construction budget to the Appropriations Committees at the same time. Presentation of our budget requirements in total rather than at separate hearings affords clearer appreciation of our total program and of our budget requests. However, authorization legislation must be passed by both Houses of Congress before our construction budget can be finally submitted to the Bureau of the Budget and be transmitted to the Congress. It is for this reason that we appreciate the prompt action of your committee in holding hearings on our authorization bill and your continued help in obtaining early approval by the Congress.

The authorizing legislation we have submitted for your consideration covers our plant-construction requirements for fiscal 1957, as now foreseen. The bill submitted to you would authorize appropriations of $254,200,000. There have been some modifications in projects in the bill since it was submitted. These changes will be explained to you as we discuss the projects concerned. The total effect of these modifications is to increase the bill by $5,200,000 from $254,200,000 to $259,400,000. This amount is slightly less than the $267,709,000 of appropriations authorized by Congress last year on the recommendation of your committee.

Our present projections indicate that for the next several years our plant requirements are likely to be about this same order of magnitude unless it develops that major plant expansion is required to meet new requirements.

The Commission's investment in plant at the end of fiscal year 1955, last June 3 had reached a total of nearly $6.6 billion, of which $629

million represented costs incurred for construction not yet completed. The costs to be incurred in completing such projects, together with the amounts authorized for projects in 1956 and the amounts requested for 1957, will bring the total plant investment to approximately $7.7 billion upon completion of all this work. The status of our plant authorization and investment is shown on my first chart.

Now that our major plant expansions are nearing completion, our construction effort is changing in character and has sharply diminished in size. Our construction costs for the last 4 fiscal years have been as follows:

Fiscal year—	*Million*
1952	$1,082
1953	1,125
1954	1,215
1955	804

In comparison, our 1956 rate is estimated at $322 million and 1957 at $350 million. The rate for each of these years, as you may notice, is less than one-half of the actual 1955 rate.

A change in the character of our construction efforts can also be noted. Most of our construction in past years was aimed at achieving a major increase in capacity for production of special nuclear materials and weapons. Today, our requirements run more to filling in gaps in the production complex, to providing new facilities required in research development, and to providing new facilities for some of our installations which were constructed initially on a temporary basis.

It is helpful, I believe, to see how the projects in our 1957 request can be divided into such categories:

Additions to production facilities:	*Millions*
1. Additions to weapons development and production plants, and improvements at storage and test sites	$40.9
2. Improvements to special nuclear materials production plants, additional feed processing capacity, and additional storage capacity for waste	52.8
New research and development facilities:	
3. Prototype reactors and plant expansion for reactor testing and development	95.0
4. Test areas and development buildings for Sherwood and another classified program	17.9
5. New high-energy accelerators and improvements for other accelerators	17.4
6. Additions and replacement of temporary structures at national laboratories	11.6
Continuing requirements:	
7. Access roads and general plant projects	23.8
Total	259.4

Just to review that briefly again, the largest is for prototype reactors and plant expansion for reactor testing and development at $95 million. Improvements to special nuclear materials production plants is $52.8 million and then additions to weapons development and production at $40.9 million.

Before reviewing individual projects for which authorization is requested, I should like to comment on our operations under the 1956 authorization act.

Our initial reaction to the section 261 requirement for authorization was that we might encounter difficulties. However, the problems we

have encountered so far have been relatively minor for the most part. I believe this is due, in major part, to the fact that the 1956 authorization bill was written so as to provide some flexibility. One way this flexibility was provided was by permitting specified projects to be undertaken even though the current estimate cost might exceed, by a fixed percentage, the estimate in the authorization. Flexibility was also provided by permitting, within certain limits, the substitution of one project for another. To date we have not had to use this substitution authority. However, certain pending changes in weapons requirements may require that we use it this year—that is fiscal year 1956. And it is important that the provision be continued in the 1957 authorization because the need for it may arise at any time. In fact, although our proposed legislation for 1957 does not do so, it may be well to consider whether the substitution provision should not be enlarged to include certain reactor development projects. As proposed in the bill, it does not include them now.

The general authority contained in the 1956 act to replace damaged plant will enable us to proceed immediately with replacement of the pressure vessel in a plant at Oak Ridge. This vessel was recently destroyed by an explosion.

The story of our experience under the 1956 authorization act would not be complete, however, if we failed to mention that there are a few projects which we should have preferred to start in 1956, but because of the authorization requirement, these projects have been held up until they can be approved as a part of our 1957 request.

In addition, we have had to delay the start of construction on the chemistry cave for Argonne National Laboratory. Engineering estimates based on more complete design indicate that the project could not be completed within the limit of 110 percent; that is, the 10 percent increase that was permissible in the 1956 authorization act. The project has therefore been included in the 1957 request at the higher estimated cost.

Mr. HOLIFIELD. How much higher was it estimated?

Mr. FIELDS. $448,000 to $800,000.

Mr. HOLIFIELD. Was that due to a complete change and enlargement of it or increased costs of material?

Mr. FIELDS. I think it was largely an underestimate of it originally, as I understand it.

Mr. BURROWS. Lack of knowledge of design specifications.

Mr. FIELDS. Lack of knowledge at the time we came in for authorization.

Mr. HOLIFIELD. When did you finish your design on it?

Mr. FIELDS. Would you answer that? [Question addressed to AEC staff representative.]

Mr. DAVIS. I don't believe we have a detailed design yet. It has been several months since we realized the cost would be close to double what we originally anticipated.

Mr. HOLIFIELD. If you haven't finished your design, then you really haven't been delayed.

Mr. DAVIS. We have suspended all work on it.

Mr. FIELDS. We won't be able to start construction of this now until July 1 of 1956—this year.

Mr. HOLIFIELD. The point is you have not gone ahead with your design and worked it out so you could go ahead.

Mr. FIELDS. I think we are in a position now where we could move forward as opposed to waiting until July of 1956.

The 1956 authorization act covered 46 projects. Seven of these projects, on the basis of later information, are now estimated to cost more than the amount indicated in the act. On the other hand, it appears that six projects can be completed for less than the amount shown in the act and that four projects can be deferred indefinitely. The prospective overruns are estimated at $7,461,500, all within the authorized percentages, while the deferrals and estimated underruns total $30,150,000. In all, as you can see, we are spending less money than contemplated; and while the 1956 bill provides flexibility, it does, at the same time, provide a measure of control, which appears to be in keeping with the desires of your committee in enacting section 261 of the Atomic Energy Act of 1954.

We have proposed 1957 authorizing legislation in the same form as that enacted for 1956, and hope that your committee will see fit to continue that form.

I should also call the attention of your committee to the need for authorizing legislation for the President's nuclear-powered peace ship. It is my understanding that the bill reported by this committee in the last session of Congress is still on the calendar, ready to be acted upon. Funds for the Atomic Energy Commission's portion of the project, namely, the reactor and propulsion machinery, can be provided in this fiscal year from funds already available to the Commission. The President, in his recent budget message, indicated that he would soon transmit a supplemental estimate of appropriation to finance the Maritime Administration's portion of the project, namely, the hull.

We hope that authorization of this project will be enacted shortly so that the Commission can begin work on the reactor construction.

Mr. Chairman, we have requested authorization for 59 projects. The order in which they are listed in the proposed bill is not particularly appropriate for our discussion. I would propose to talk to the projects as grouped by responsibility of each of the Commission's program division directors; and, for this purpose, I have furnished the clerk of the committee, for your use, copies of a list of the projects grouped in this order. That is the small list of about six pages, I believe, that has been provided to you. These lists give cross-reference page numbers to the analysis of the bill which is this document and to the more detailed data sheet book furnished to the committee.

Before taking up other individual projects, I want to mention the problem we have regarding the first project for the Division of Production, namely, the $22.2 million for additional feed materials plant. As you know, Mr. Chairman, industry has been invited to submit proposals to supply for 5 years the feed materials needed which are in excess of the capacity of AEC plants already built or now under construction. These proposals will not be received until next fall.

To date, we have had no clear indication as to what we may expect from industry. The Commission, therefore, has included in this budget the authorization request so that, in the event we do not receive acceptable proposals, we could proceed with construction in time to meet the additional feed production requirements. Furthermore, if acceptable proposals were received, it would probably be necessary that ap-

74915—56——2

propriations be available to cover liabilities under the production contracts, including termination costs, to protect the investment in plant made by industry.

If this project is authorized by the committee, we would request the funds in our 1957 plant budget and, at the same time, request authority to transfer such amounts as may be necessary to our operating budget in the event that we find that industry can and will provide the necessary plants for the production of feed materials.

With the assistance of our division directors, I should now like to take up the individual projects in the order of their appearance on the outline lists you have been furnished unless there are general questions which the committee wishes to take up at this time or unless you wish to proceed in some other manner.

I have only one other remark before we go on, sir. As happened last year in discussing these projects, inevitably there will be classified matters come up throughout our discussion.

Mr. HOLIFIELD. We will submit the transcript for editing to you.

Mr. FIELDS. Thank you.

Mr. HOLIFIELD. Then we may go ahead and we can speak frankly.

Mr. FIELDS. I believe that would assist us in looking at these projects.

Mr. HOLIFIELD. Then we can just strike out later the part that is classified.

Mr. FIELDS. These opening remarks are unclassified.

Mr. HOLIFIELD. I think, if it is all right with Mr. Cole, we will just go ahead and go over this lightly where there is no controversy or no complications—let's put it that way—and then we will have a chance to study it and if there are questions, we can have you back later for specific questions. If they occur to us today, we will ask them today.

Mr. FIELDS. All right, sir.

Mr. COLE. Let me ask what the corresponding figure is to the total of $259 million of last year?

Mr. FIELDS. Last year it was $267,709,000. In order that you may follow the order I will follow this outline list that we have given to you. The first two projects are under the Division of Raw Materials.

The first project is for an analytical laboratory addition at Grand Junction, Colo., in the amount of $362,000. This is an expansion necessary in the laboratory because of the increased requirements for assays to determine payments for uranium and vanadium. With this tonnage going up there is a definite need for expansion to handle it from 1957 on.

The second project is for off-site access roads in the amount of $2,873,000. This is a similar item to that which we had last year, and is for the construction, improvement, and in certain cases, the repair of the roads that lead from the mining areas to the ore-buying stations and to the processing plants. Almost 300 miles of road are involved in fiscal year 1957.

Mr. COLE. And at how many different localities?

Mr. FIELDS. It occurs within six States. The mileage varies between States. As I recall, the greatest mileage is in Utah, where something like 90 miles of road is involved.

Mr. COLE. Total of 300 miles?

Mr. FIELDS. 299 miles—Colorado, Utah, Arizona, Wyoming, South Dakota, and the State of Washington.

Mr. JOHNSON. And New Mexico.

Mr. COLE. Out of this 300 miles are any of the roads new or is it all repair and upkeep.

Mr. JOHNSON. Approximately eight projects represent essentially new roads. In using the term "new road," I refer to the improvement of an existing trail through that unsettled country, so that it is satisfactory for truck haulage.

Mr. COLE. I will refresh my recollection. Is it the policy for the Federal Government, the Commission, to pay the entire cost of these access roads by way of construction as well as maintenance?

Mr. JOHNSON. The question of obtaining State and county participation has been under consideration and discussion with the various States and counties since the Commission carried on this particular program.

Mr. COLE. That is for how many years?

Mr. JOHNSON. That is for the past several years. We reached an agreement in December of 1954 with the States of Colorado and Utah, which were the States in which most of the roads were built up to that date, whereby those States have agreed to participation on the following basis: to expend on construction, improvement, and maintenance of truck uranium haul roads at least as much as the road users' revenues derived from the traffic on these roads, plus the applicable share of Federal-aid funds where the routes are on the Federal-aid system. The revenues are recomputed periodically and for 1955 amounted to $185,000 for Colorado, $243,000 for Utah, or a total of $428,000. Applicable Federal-aid funds will materially increase this amount.

Second, the States and counties are to assume all maintenance costs on both gathering roads and trunklines after construction of improvement is completed; and third, to assume all construction, improvement, and maintenance costs on Federal-aid primary routes serving uranium-producing areas.

Mr. COLE. Then all of this appropriation or authorization for access roads is for the construction of new roads and not for maintenance of roads in those States where you have agreements?

Mr. JOHNSON. That is correct.

Mr. COLE. Colorado and Utah will maintain all of the access roads which the Commission has built.

Mr. JOHNSON. That is correct.

Mr. HOLIFIELD. What is the profit position of these mines? Are they making very high profits in addition to having their roads built for them free?

Mr. JOHNSON. The mining operations profitwise range from the lowest to very substantial profits. The roads do not serve individual mines. The mines must build their own roads to the gathering lines or to the trunklines. The impact of the traffic, as a result of the uranium business, is illustrated by the fact that in 1950 approximately 200,000 tons of ore were hauled from mines to the buying stations and mills. In this fiscal year the tonnage will be about 1½ million tons and that will grow to about 2½ million tons. The impact of this traffic in this unsettled area has been very heavy. We have realized the desirability of getting additional assistance and participation on the parts of the States and the counties.

The roads, I might say, are constructed by the Bureau of Public Roads. The Bureau of Public Roads makes the estimates and deter-

mines the types of roads needed. We have written to the Bureau of Public Roads asking that they endeavor to get the maximum participation on the part of the counties and States. Our own personnel have talked to the various officials of the States as well, but the Bureau of Public Roads is in a very good position to get cooperation since a considerable amount of Federal funds is spent in the States on the approved Federal highway systems.

Mr. COLE. The total amount of State contribution in those 2 States was about $400,000; was it not?

Mr. JOHNSON. For the one item on construction and improvements of maintenance roads and in addition to that they assumed all the maintenance costs of the gathering roads after construction and improvement.

Mr. COLE. I am seeking to learn what portion of that aggregate amount of $400,000 or $450,000 represents revenues levied on the users of the highways. What portion represents simply a return to Uncle Sam of money which Uncle Sam has already given to the States in the Federal aid system?

Mr. JOHNSON. The $428,000 was entirely revenue from the users of roads and the applicable Federal highway funds that would be added are not specified but that is over and above the $428,000.

Mr. HOLIFIELD. Over and above your own contribution, too?

Mr. JOHNSON. That is correct.

Mr. HOLIFIELD. Going back to this laboratory addition, is that for the Commission or is it for a contractor?

Mr. JOHNSON. It is a Commission-owned facility operated by a contractor on a fixed-fee basis. The function of that laboratory is to assay ores that are purchased for the Commission's account; to assay all of the uranium concentrates that are delivered to the Commission from privately owned mills——

Mr. HOLIFIELD. In other words, you have to do that to protect yourself on the payment for the ore.

Mr. JOHNSON. We pay only on the basis of the Commission's assays and not on the assays of the company selling the concentrates.

Mr. HOLIFIELD. To classify that in my own mind then, this particular laboratory is for the Commission's protection in checking the assays which may be made by the mine owner at other places. Am I right there?

Mr. JOHNSON. I would state it this way. The private mills deliver to the Commission uranium concentrates for which we pay on the basis of the uranium content. The Commission through its contractor samples the concentrates, makes the determination as to the uranium concentration, and pays on the basis of that assay. If the private owner has a question, this may call for an umpire, but in the absence of an umpire the Commission's assays are the basis of the payments.

Mr. HOLIFIELD. This is the Commission's assayer then.

Mr. JOHNSON. Yes, sir.

Mr. HOLIFIELD. Isn't it usually accepted by the mine owner as being an objective assay?

Mr. JOHNSON. We have relatively few umpire cases. I think in this area we might have as many as 10 or 15 a year. We had more earlier, but we won practically all—80 percent of these cases. There are very few questions as to the Commission's assay.

Mr. HOLIFIELD. Has the Commission signed up with Lucius Pitkin to make assays? Is he the contractor that will use the laboratory?

Mr. JOHNSON. Lucius Pitkin is the new contractor effective February 1 for operating the Commission's ore-buying stations and the analytical laboratories for which authorization of an addition is now requested.

Mr. HOLIFIELD. What type of a contract do you have with him—just for services?

Mr. JOHNSON. Just for services—a fixed-fee contract of $58,800 a year, out of which the contractor pays the salary of the contractor's manager in the Colorado Plateau, leaving approximately—I assume the salary would be on the order of $13,000 to $15,000 a year—leaving the contractor $44,000 a year for home office, for supervision, office expenses, auditing, and functions of that kind, and the responsibility for handling the contract.

Mr. HOLIFIELD. All right.

Mr. COLE. I notice in this detailed justification an item of highway—1 mile of roads at a cost of $100,000. Can you tell us what that is? I imagine it is a bridge instead of a highway.

Mr. FIELDS. I think it is a bridge, as I recall. Gateway, bridge, and approaches.

Mr. JOHNSON. That is correct, in Colorado. That is an area that is almost entirely an uranium operating area. There was a small bridge in there earlier which was carried away or broken as a result of truck operation.

Mr. COLE. Thank you.

Mr. HOLIFIELD. Why did you not ask for bids for the operation of this assay service, or did you?

Mr. JOHNSON. We called for proposals on October 14 and in addition sent out at the same time letters of invitation to approximately 20 who we thought were qualified candidates. In addition we put out a press release. From that there were a number of inquiries. Eight companies actually submitted proposals. These were carefully reviewed. Our selection narrowed the list down to 3 and then an interview with each of the 3 finalists preceded the selection of the contractor.

Mr. HOLIFIELD. Were they willing to put in the laboratory themselves?

Mr. JOHNSON. This contract was merely for services. There was no question of a private company building the laboratory. The laboratory is in addition to one that the Commission now owns in a closed area, and it would hardly be practicable for a private company to be a joint owner within an enclosed area belonging to the Commission.

Mr. HOLIFIELD. Is that for security reasons you have it there or just general convenience?

Mr. JOHNSON. Originally security reasons. Security reasons still prevail to a considerable extent since within this same area the uranium is stored prior to shipment to the refineries.

Mr. HOLIFIELD. What is the value of the plant that you already have there—the laboratory you already have there—approximately?

Mr. JOHNSON. Approximately the same as the one we are requesting now. The laboratory that we now have was completed in May 1953. It has an area of 7,800 square feet and cost $248,000. When that was completed, as the General Manager said, the annual production of

uranium on the plateau was considerably less than the amounts we anticipate the next few years. The $362,000 for 8,000 square feet represents a substantial increase in cost per square foot, but experience indicates that construction costs have increased considerably since 1954. This figure has been reviewed by our Division of Construction and Supply and seems like a reasonable estimate.

Mr. HOLIFIELD. Your total investment there is about $610,000 and you are getting the service rendered for, you might say, around $49,000—about 8 percent.

Mr. JOHNSON. That is only part of the services. In addition to the services of operating the laboratory, the contractor also operates for the Commission about 7 or 8 ore-buying stations scattered throughout the area where the miners deliver ore. There the ore is weighed and sampled and the sample is sent to this laboratory for assay. Payments are made for the ore on the basis of this assay. The laboratory also assays samples of uranium concentrates when they are delivered to Grand Junction. All this requires a very careful operation.

Mr. HOLIFIELD. Do you have to assay every load or every ton?

Mr. JOHNSON. Every lot of ore that is delivered to the Commission is assayed. A lot may be a 10-ton truckload or it may be several hundred tons depending upon the size of the mine operator.

Mr. HOLIFIELD. You more or less spot check it, I suppose?

Mr. JOHNSON. The ore is all crushed. Each individual lot is sent through a crushing device, then through an automatic sampler, and then is finally reduced to a size for a laboratory analysis.

Mr. HOLIFIELD. I think we can go on from there. I am getting a little education as we go along.

Mr. FIELDS. The next group of projects is under the Division of Production. There are 14.

Mr. COLE. Did you explain the reason for the difference in amount between $22 million and $17 million?

Mr. FIELDS. We have not done it. We will get to it right now. The total amount under the Division of Production is $57,567,000. The first of these items is the additional feed materials plant which in the bill we submitted to you was $17 million. That has been increased to $22,200,000. If I could come back to that increase in just a moment, sir, I would like to indicate what the facility is. This is for additional refinery and green salt capacity which we estimate will be needed by somewhere around fiscal year 1959. By that time the tonnages to be processed will have increased perhaps 5,000 tons per year beyond presently authorized capacity. This is the facility which I mentioned in my opening statement on which we had requested proposals from industry to see if they could undertake the provision of this additional capacity. This project is included in the event that we are not able to work it out to secure satisfactory proposals from industry which will be coming in in October.

Included is a uranium refinery involving three large buildings and a tank farm. There is also a green salt plant which is one building with a tank farm associated with it.

As you know, we have under construction at Weldon Spring a feed-materials plant and in the course of that construction, with the increased cost experience that we have had there, we find that we have had to increase the estimated cost in this instance. It is largely due

to increased cost, wouldn't you say? [Question addressed to Mr. Block.]

Mr. BLOCH. We now have more complete design information.

Mr. FIELDS. More specific design—specific requirements.

Mr. HOLIFIELD. Is this the item you said you could not start until after July?

Mr. FIELDS. No, sir. This is not the item.

Mr. COLE. Why should it take until October to determine whether you can get a satisfactory agreement with a private operator?

Mr. BLOCH. I think the proposition here is that there is time. It is a complicated problem and we wanted to offer industry a real chance to study it and to submit proposals.

Mr. COLE. You mean the problem is so complicated that it would require that much time for private industry to be able to give a fair estimate of interest.

Mr. FIELDS. We thought there should be an extended time for industry to look at the proposition.

Mr. HOLIFIELD. You actually won't need the capacity until 1959?

Mr. FIELDS. With proposals coming in October there is nothing in the time element that should foreclose industry from doing it. Isn't that correct, Ed?

Mr. BLOCH. Yes. We gave them the maximum amount of time consistent with our projected need for the facility, which is in the spring of 1959.

Mr. HOLIFIELD. And if you have this allowance, you are in a more independent position?

Mr. FIELDS. That is correct.

Mr. HOLIFIELD. Then if you wait until the last minute and then have to depend upon outside capital to do it and maybe get stuck for more than you think you should pay.

Mr. FIELDS. We will need additional processing capacity.

The next item is 1 of 4 that follow—not immediately following, but in this Division of Production list.

Mr. COLE. Before you leave that item. If it is not a matter of urgency, what is the reason to include it in the appropriation or authorization now or do you seek simply the authorization and do not anticipate seeking the appropriation?

Mr. FIELDS. We feel the authorization should go forward in fiscal 1957.

Mr. BLOCH. Mr. Cole, in order to meet the date by which we would need this capacity, we would either have to secure a satisfactory bid from industry this fall or start construction ourselves in order to have a facility ready to operate in the spring of 1959.

Mr. COLE. I can understand why you might want to seek the authorization now, but I would think that under the circumstances you could very well not ask for the appropriation until it is resolved as to whether the Commission is going to do it or private industry. If it developed the Commission must do it, you could obtain money through a deficiency or a supplementary.

Mr. HOLIFIELD. You won't know by the time Congress adjourns.

Mr. COLE. They could obtain it early in 1957.

Mr. BLOCH. It might set it back. The point General Fields made in his opening statement is that if we end up with commercial contracts we will need these same funds to cover our obligations under

the contracts. If we don't we need the money for construction, we would need the money to cover our contractual obligations and we would have to have that at the time we entered into the contracts.

Mr. COLE. It doesn't make any difference whether you do it or hire somebody else to do it, you are going to have to have authority and the money.

Mr. HOLIFIELD. Could you transfer construction money to contract money?

Mr. FIELDS. We specifically would speak to that before the appropriation committees before we get there. As we mentioned in the instroduction, we would request them to authorize transfer of the funds in this case.

Mr. COLE. I would just like to be certain of the extent of effort the Commission is going to bend toward finding a satisfactory arrangement with private industry to do it.

Mr. FIELDS. We have had several meetings with industry on this subject already that have been rather well attended, going into the process. Actually, haven't they visited Fernald a number of times?

Mr. BLOCH. Yes, we have arranged a series of visits to all the facilities this month. We have had two general meetings. We had a meeting in Cincinnati in January and at that meeting we solicited suggestions from interested people as to what information they needed and how best to give it to them. As a result we have set up special rooms at our plants where we have cost data, engineering data, actual drawings, and other things that they need. We certainly have as our objective and our desire getting industry to pick up this problem.

Mr. COLE. O. K.

Mr. HOLIFIELD. The next item.

Mr. FIELDS. The next item is the improvement to reactor instrumentation at Hanford, Wash. As I believe I mentioned before, it is one of several projects having to do with improvements or changes—modifications to reactors. All of these look toward either safety, improved operating conditions, or increased production because of increased operating efficiency. This particular one has to do with achieving more control over the reactor. We believe the additional control is necessary in order to maintain the proper safety.

Mr. HOLIFIELD. I would like to ask a few questions. We are putting $8 million more construction cost on this old reactor.

Mr. FIELDS. This is for all of the older reactors. It is also for K——

Mr. BLOCH. This is for six.

Mr. FIELDS. This is for six reactors.

Mr. HOLIFIELD. Is it estimated that by the investment of this amount you will increase your capacity to the point where this will be a paying investment?

Mr. FIELDS. This particular improvement, as I understand it, is primarily required in order that higher power levels may be achieved and out of these power levels of course you get increased production.

Mr. HOLIFIELD. This is more desirable than to go into a new reactor of a dual purpose there?

Mr. FIELDS. Could we give you a few general comments on overall reactor programs that we have been going through? I believe you have the figures more clearly in mind than I do, Mr. Bloch.

Mr. BLOCH. We have underway about $39 million worth of——

Mr. COLE. Would you speak a little louder. I have difficulty hearing you and you have the back of your head to the reporter.

Mr. BLOCH. We have about $39 million of work underway now on the older reactors at Hanford. With this expenditure we expect to get increases in power levels. There is in this list a total of $17 million among several items for work that is aimed at increasing reactor safety or increasing reactor production. As a result of this $17 million expenditure we anticipate that we can get another significant increment of production.

Mr. HOLIFIELD. Will these improvements also have an effect upon your current production—make it safer and more secure?

Mr. BLOCH. Yes, sir.

Mr. HOLIFIELD. So you would accrue some value in the surety you would maintain your present production.

Mr. BLOCH. That is correct.

Mr. HOLIFIELD. You are sure of that. That is the best engineering device——

Mr. BLOCH. That is correct. That is our best judgment.

Mr. COLE. I would rather have you base it on that than your increased production. To my mind I would rather put somewhat more on a brandnew, modern, up-to-date efficient reactor than to spend $17 million patching up some old ones.

Mr. FIELDS. I think wherever you have a production complex like this, even if you had the latest reactor you would be spending money on the improvement of it. There are definitely some safety features in some of these items, particularly an item here on reactor safety improvement at Hanford for $5 million which is clearly for the improvement of the emergency measures for shutting these reactors down. So there are some improvements of this nature throughout the reactors.

Mr. COLE. What have we been talking about—items 2 through 7?

Mr. FIELDS. There are two waste disposal items there. We have been talking about improvement to reactor instrumentation, reactor safety, improvement in reactor cooling water, which is the last item on that page, and the first item on the top of the next page which is a charging and discharging facility at Hanford (8).

Mr. COLE. Explain the reason for reducing the item 57–a–7 project from $2 million down to $550,000.

Mr. FIELDS. This is a deferral of some of the aspects or a cancellation of one aspect.

Mr. BLOCH. It is a deferral.

Mr. FIELDS. This had to do with a treatment of the water which was deferred. Is that correct?

Mr. BLOCH. That and also a deferral of other work which was previously in the proposal. This reduction is based on a recent review by the Hanford office.

Mr. HOLIFIELD. Who passes on the technical part of this? This is their recommendation, I suppose. Do you have men on your staff like Mr. Shaw who was in charge at Hanford for a long time? I suppose his opinion as a practical operator backs you up in this?

Mr. BLOCH. That is correct. The work is all reviewed first by our Hanford office and reviewed by technical people on my staff.

Mr. FIELDS. They are actually proposed by the contractor initially, aren't they?

Mr. BLOCH. Yes.

Mr. HOLIFIELD. I understand from Mr. Norris that General Electric also backs this up.

Mr. FIELDS. Yes, sir. That was the intention of my remark.

Mr. SHAW. Sir, I would like to inject there that these safety items have always been reviewed by our Advisory Committee on Reactor Safeguards and they deem them to be very proper.

Mr. HOLIFIELD. I notice you have one item in there to check. What was it—level—rod instrumentation?

Mr. FIELDS. There is something in here on rod instrumentation to prevent damage to reactors in emergencies.

Mr. HOLIFIELD. Item 57–a–2.

Mr. FIELDS. There are those items looking toward improvement of the reactors. Then there are two items in this list for improved high-level waste-handling facilities at Savannah River in the amount of $5 million and an item for additional waste disposal facilities at Hanford in the amount of $5 million. Both of these are estimated as being required at this time in light of the waste that is being accumulated at these reactor sites and the problem of disposing of the waste. We do have alternative methods under consideration and looking toward concentration of wastes. These are under development, but at the present time they are not sufficiently firm that one can plan on utilizing them. There is therefore a requirement for these additional facilities.

At Savannah River there would be 4 tanks and at Hanford there would be 12 tanks.

Mr. HOLIFIELD. Why have you asked for 25-percent leeway on this item in view of the fact you have been building these now for years?

Mr. FIELDS. This is waste disposal.

Mr. BLOCH. This is at Savannah River.

Mr. FIELDS. It is at Hanford too.

Mr. HOLIFIELD. It is 20 percent.

Mr. FIELDS. It is 25 percent, I believe. This is in the category of 25 percent, sir.

Mr. BLOCH. We indicated in the data sheets we might undertake in addition or perhaps in lieu of some tankage to put in waste concentration facilities. Particularly at Savannah River the facilities for waste evaporation and concentration are in an experimental status. We are doing some pilot work down there now with the objective of substantially reducing the volumes of waste that have to be stored.

Mr. HOLIFIELD. That still doesn't apply to these particular tanks does it? The fact that you are doing pilot operations is not included in your 25 percent?

Mr. BLOCH. No, sir; but——

Mr. HOLIFIELD. You say, for example, the existing capacity of the Purex plant tank farm will be filled some time in fiscal year 1958 and this fact will necessitate the beginning of construction sometime in fiscal year 1957. Apparently in spite of the fact you are doing some investigation of segregation and evaporation you still anticipate it won't be successful enough but that you will fill your tanks.

Mr. BLOCH. That is correct. That is our best estimate at the moment.

Mr. HOLIFIELD. That still doesn't answer the question about the 25-percent leeway on the tank farm—the fact that you are doing some experimental work on the side.

Mr. BLOCH. Except to the extent, particularly at Savannah River where we indicated the money we are requesting would be used for tankage and/or possibly waste concentration in that facility.

Mr. HOLIFIELD. That is a separate item from this, isn't it?

Mr. FIELDS. What Mr. Bloch is saying is that we have made this estimate for the improved high-level waste-handling facilities that we have described at Savannah River on the basis of tanks and some pumping facilities but that if out of this development work should come an alternative proposal, we would propose to substitute in this case and incorporate the improved process for this. This is my understanding of the purpose.

Mr. HOLIFIELD. Would that increase or decrease the cost?

Mr. FIELDS. We don't know at this point.

Mr. HOLIFIELD. So there is a likelihood that your investigations might run it up as much as 25 percent, and yet if it did run it up that much, do you think it would be economical to do it?

Mr. FIELDS. It depends on the results.

Mr. HOLIFIELD. You would have to get 25 percent saving in your tank capacity in order to justify it, wouldn't you?

Mr. FIELDS. Yes.

Mr. BLOCH. Yes, sir.

Mr. HOLIFIELD. That is 57–a–5, isn't it?

Mr. FIELDS. No; that is 57–a–3. That is the one we are talking about—57–a–5 is at Hanford.

Project 57–a–6, which is the modifications to existing production plants for increased efficiency and safety, has to do with the automatic sampling and monitoring of the waste and process solutions in certain process plants at Hanford.

The 57–a–7 item for improvements to the reactor cooling water effluent system is another of the projects at Hanford.

On the next page—charging and discharging facility at Hanford. This is the item for which we first requested $2 million and have now asked for an increase to $3,450,000. As I mentioned when we discussed this briefly before, this project will provide for automatic charging and discharging without shutting the pile down. This particular request is for a modification of one reactor in order to develop this process to see how effective it will be. This equipment will identify the location of fuel elements which have ruptured as well as be able to discharge them without shutting down the pile.

I presume, Mr. Chairman, I can go right along unless somebody has a question.

The next project is a chemical processing plant at St. Louis in the amount of $1,600,000. This is a plant for recovering uranium from residue wastes.

Mr. HOLIFIELD. Is that old stock you have stockpiled there or is it current?

Mr. FIELDS. It would be old stock and new.

Mr. BLOCH. Both.

Mr. FIELDS. The next item is the barrier plant automation at Oak Ridge in the amount of $1,400,000.

Mr. HOLIFIELD. If it will do all that you describe, it is a good investment, I would say.

Mr. FIELDS. Yes, sir.

The next two items are the reactor temperature test installation at Hanford and the fuel element heat treating plant at Fernald.

The renovation of service facilities at Oak Ridge is next. This has to do with certain service facilities, such as the electroplating, acid reclamation, and electrical shops. They have been at Oak Ridge since 1944, and they have been deteriorating rather badly. I believe associated with this would be a chemical process we have never attempted before ourselves.

Mr. HOLIFIELD. Is that a new process?

Mr. FIELDS. I don't believe it is a new process. We just have not done it there before ourselves.

Mr. HOLIFIELD. Is that why you asked for 25-percent leeway? Haven't you enough record or history on this type of a thing to come closer than that?

Mr. FIELDS. I think it is because this is for a miscellany of things. That is one of the reasons for having it in this category.

The next item is renovation of building for technical information services at Oak Ridge. We have our facilities for handling research and development reports there, including reproduction, distribution, classification, and all of the work that takes place there under the technical information services. We have these activities housed in 4 different locations, approximately 3 miles apart. They presently occupy about 45,000 square feet. What this proposal entails is to put them in a permanent warehouse that is there and modify several bays of that warehouse to provide space on the order of 58,000 square feet. Centralizing this work will enable our people more effectively to carry out their increased responsibilities. We are attempting to develop and disseminate existing information under access permits at the present time and to develop new documents—new comprehensive records on reactors, processings, and other subjects related to civilian uses.

That concludes the items under the Division of Production. The next group is under the Division of Military Application.

Mr. HOLIFIELD. I might add you have got 25 percent on that last item also.

Mr. BLOCH. That is only a 10-percent item, sir. That is the category which is under 10 percent——

Mr. HOLIFIELD. Oh yes; that is right.

Mr. FIELDS. The next item is weapons production and development facilities. The first project, 57-b-1—in the amount of $15 million is a similar item to the one we had last year in the amount of $20 million and which we have employed fully. We would expect in fiscal year 1956 to apply some of the percentage overrun that you have authorized. It is an item which would be used for production and development facilities the specific nature of which is not now known, although probably falling in the area of weapons fabrication. We found this extremely useful and helpful last year. I can give you a list showing how what we anticipated last year has been applied and used.

Actually last year we had $20 million and we were able to go ahead with the construction of facilities which are permitting us to improve our weapons. We need a general contingency item to cover de-

velopments of this type in the weapons program, in which rapid changes occur.

Mr. HOLIFIELD. You have nothing to say about the number of weapons or the type of weapons, do you? That is a military determination is it not?

Mr. FIELDS. They state requirements to us, but it is generally after we have made predictions to them of what we can produce. They know our production capacity. They keep abreast and we keep the Military Liaison Committee informed of our production capabilities.

Mr. HOLIFIELD. You have to do the research and development of the small weapons. For instance, if they were to come to you and say, "We want a different type of weapon rather than the existing weapon," you would have to do the research and development work to package that weapon and delivery case.

Mr. FIELDS. Oh, yes. We actually do all of the developing and production of nuclear components and for the free-falling bombs—all development and production.

Mr. HOLIFIELD. It is beyond your province to pass judgment on what they should have, isn't it? I mean from a standpoint of strategy, both offensive——

Mr. FIELDS. From a standpoint of justification of what they state they want in numbers and types, this is not within our province. That is correct. That is if they say they need X thousand of weapons, our only—I should say our major comment will be to the effect of whether it is feasible to produce them or not.

Mr. HOLIFIELD. That is a determination of the Joint Chiefs of Staff in relation to their potential targets and the rate of attrition and delivery and all that sort of thing?

Mr. FIELDS. That is correct.

Mr. HOLIFIELD. I think this matter of requirements is very important. I think maybe we should take that up with the military as to their reasons for these determinations and so forth because it would be based on a matter of military strategy. Actually you are just acting as their agent to carry out their requirements, aren't you?

Mr. FIELDS. Yes; in terms of production of weapons.

Mr. HOLIFIELD. I think of the military as feeling we never have enough guns or enough bullets. We just keep on getting more and more and more. I understand they feel they can do a better job with more, but I still wonder what the end is going to be.

Mr. FIELDS. I know the Commission has advised the Joint Committee of the allocation that has been made for domestic purposes—something like 20,000 kilograms that has been earmarked to be allocated to domestic reactor programs.

Mr. HOLIFIELD. Do you set that requirement?

Mr. FIELDS. The Commission set that one and advised the Department of Defense, which had no objection.

The next project is for weapons development and engineering facilities at Livermore, Calif., in the amount of $10 million.

The purpose of the project is to add ordnance engineering and other functions to the weapons development activities at Livermore. These functions will be carried out by UCRL and Sandia Corp.

The next project is the storage site modifications in the amount of $2 million. This is generally for miscellaneous items that would be

applicable in all of the various storage sites which are under Atomic Energy Commission control and operation.

The next item is a metallurgy laboratory at Livermore. This is 57–f–1 in an amount of $2,270,000. This is to provide at Livermore Laboratory a much-needed facility for the work in chemistry and in metallurgy. They have not had a facility adequate to handle such work there and they do need it urgently in conjunction with their research and development program.

The purpose of this project is to provide them with that capability.

The next item is for base construction at the Pacific proving ground in an amount of $1,569,000. This is for certain warehouse renovation, certain new warehouses, shops, and certain fire protection for installation at Eniwetok and at Parry. This is a continuing requirement for maintenance of this proving ground.

Mr. VAN ZANDT. General, have you been there recently?

Mr. FIELDS. I haven't been there since the Castle Operation.

Mr. VAN ZANDT. I am interested in the type of metal hut you are using out there. How is it taking the weather?

General STARBIRD. It is taking it wonderfully, sir. If you mean that aluminum hutting, a very light grayish coating seems to form on it. Hutments that were put in 5 years ago approximately show no real corrosion.

Mr. VAN ZANDT. How about the part which is buried? I understand you deliberately buried some of it.

General STARBIRD. That is a new one to me, sir. The next time I go out, though, I will look.

Mr. FIELDS. You mean part is underground?

Mr. VAN ZANDT. Yes.

Mr. FIELDS. Most of them, as I recall, sit up. You have a concrete floor and I think you take off from there. There is nothing underground.

Mr. VAN ZANDT. As I understand it, in several instances they deliberately buried the metal to get the reaction. I am interested to get a comparison between the Butler steel-type and this aluminum-type construction.

Mr. FIELDS. We could develop that for you, sir.

The next item is again at Livermore. It is for high explosive and weaponizing facilities at Livermore.

The next item is 57–f–4, the installation of 115 kilovolt tie line at Los Alamos, N. Mex., in an amount of $1 million. During the winter of 1954–55 at Los Alamos, our peak power demand was 16,600 kilowatts, all locally produced. We find that this is going to go up substantially in the next few years as a result of the installation of the new laboratory and the new sigma building that you authorized last year as well as certain experimental requirements. So we will have a requirement for something like 29,000 kilowatts by 1958.

For this reason we feel the solution is to lay this tie line from Los Alamos to Santa Fe in order that we may procure power from the Public Service Company of New Mexico.

The next item is base construction at the Nevada test site in an amount of $543,000. It is for the provision of 10 quonsets in a technical area there to accommodate the added loads that we have had on the proving ground such as in Teapot and which we anticipate will continue there in the future. Additionally there would be construction

of a security building at the main gate in order that the security matters—passes and all this sort of thing—can be handled right there rather than continuing to take them up in the proving ground where they are now handled.

The next item is for manufacturing support facility at Kansas City in an amount of $444,000. This is a plant that Bendix operates for us.

The next item is a warehouse at Sandia in the amount of $308,000. This warehouse would provide 40,000 square feet of warehousing which is needed to replace the 20,000 square feet that we have now in buildings that have badly deteriorated. It would also provide inside storage space in place of something like 12,000 square feet of outside storage that is presently utilized at Sandia.

The next item is a mechanical shop addition at Livermore, Calif. The additional capacity contemplated here is a building of some 8,000 square feet with equipment to give additional mechanical shop capability.

Mr. HOLIFIELD. Going back to 57–f–8, how much is that a foot?

Mr. FIELDS. 8,000 square feet at about $100,000 for the building and $175,000 worth of equipment in there. That would be——

Mr. HOLIFIELD. Excuse me, I meant the 57–f–7 warehouse at Sandia.

Mr. FIELDS. That is $5.50 a square foot.

Mr. HOLIFIELD. What type of construction?

General STARBIRD. It is a steel frame—steel fabricated building on concrete footing with a concrete floor, sir.

Mr. HOLIFIELD. Isn't that a little bit high? It seems to me that in Los Angeles we are building warehousing quite a bit cheaper than that.

General STARBIRD. This has some office space in it, sir, in addition to the warehouse. It has some cooling in that office space and, of course, does have some heating.

Mr. HOLIFIELD. That is not just straight warehouse cost.

General STARBIRD. It has a little office space in there plus cooling and heating. My recollection was that the military were running in the neighborhood of $6 a square foot for a warehouse containing an office for the warehouse proper, sir.

Mr. HOLIFIELD. You lose me when you go into heating and cooling. I know cooling can be quite expensive out there, but I saw some recent figures in Los Angeles for warehouse construction which ran down around $2 or $3.

Mr. FIELDS. Mr. Derry, do you have any comments?

Mr. DEERY. This $5.50 includes, as General Starbird described, utilities. The previous item of warehouse at Sandia is completely open and doesn't have any insulation and it was $4. This is a prefab siding type warehouse. This is about the experience we have putting up Butler warehouses and bare warehousing is around $3.50 and $4.50 per square foot depending on where you locate. It depends upon how much you have to pay for labor and installation. In the St. Louis-Kansas City area I think it is a little higher cost than it is farther west. Our experience is around $4. I didn't realize it was down to $3 in Los Angeles.

Mr. HOLIFIELD. It may be a different type of warehousing. I was thinking of concrete floors and the sectional walls which are poured on the floor and raised—tilt-up type out there. It seems to me it runs quite a bit below $8.

Mr. DEERY. We have put some tilt-up type construction at Hanford, and I believe our warehousing cost there though is higher than this—I believe around $7 or $8.

Mr. HOLIFIELD. I may be in error.

Mr. FIELDS. The next item is a programing building at Livermore in an amount of $180,000. At Livermore, by the time this building is built, we will have two very advanced computers in operation and we have a requirement for programing the work for them. This building would be located between those two computer buildings. At the present time the coding and programing people are located some distance from the computers. I don't know the data on the building itself. Do you have it?

General STARBIRD. The building itself is a small building of about 40 by 90 feet. It is a 2-story building. The cost will run about $180,000 as General Fields said. It is actually in between the 2 computer buildings so programing and coding staffs can sit right next to the 2 machines.

Mr. FIELDS. The next item is real estate development program at Los Alamos in an amount of $359,000. This is an item, as we have informed the Joint Committee, in which we have been studying the development of an area at which we would offer for sale lots which would enable someone there who wished to do so to buy land and build his own house. We are studying this now to see whether we can develop such an interest in the community. It is an area that is off on one mesa slightly away from our present housing areas. We haven't reached a point where we consider it desirable to dispose of the community of Los Alamos, yet we have the feeling there is some kind of a relief valve necessary. There are people there who do live in the valley. Some of them own homes quite far away. There are others from time to time who have indicated they would like to own their own homes. This is a sort of relief valve that we would attempt here in developing something like 98 lots. We would bring in the water mains, electric lines, sewers, and that sort of thing, and offer these for sale under certain conditions. That is the purpose of this particular request.

Mr. HOLIFIELD. Would you get enough out of the lots to more than recompense you for this amount?

General STARBIRD. That is part of the study to examine what the costs are.

Mr. HOLIFIELD. I don't want to see you go in the real estate business unless you make a little profit on it. If you are going to start subdividing and you have got some land you don't need, I don't see why you shouldn't make it available to the public. I see you have 5-acre lots lined up in this.

Mr. FIELDS. They vary in size. Some of them are smaller than that. I don't know the smallest size—about 200 by 100.

Mr. HOLIFIELD. Let's have a report on that when you get your study on it. Let's see how good you people are as real estate people.

Mr. FIELDS. All right, sir.

The last item under the Division of Military Application is conversion of barracks for the Santa Fe operations office headquarters—57-k-1. These barracks are presently on Sandia Base at Albuquerque, N. Mex., and owned by the Department of the Army. We have determined from them that they find these barracks are surplus to their

needs. These are the modern barracks that were built down there. I believe a number of you have undoubtedly visited that area. This proposal is for the modification of four of those. They are three-story buildings—for the Santa Fe operations office headquarters.

Mr. VAN ZANDT. Are they over in the Army area?

Mr. FIELDS. They are over inside the limits of the post, but they are down near the boundary line of it and we will have no problem with access there now. You can go freely into the post area. We believe this is a good solution for pulling this headquarters together. It is now located in three principal locations with a few people in the fourth and they are spread all over.

Mr. HOLIFIELD. The present buildings are quite a way apart?

Mr. FIELDS. They are quite a way apart and not very satisfactory either. You will recall we took the New Mexico School of Mines and made an office building from it. It is not satisfactory office space.

That completes the projects within the cognizance of the Division of Military Application. The next division is the Division of Reactor Development in which we have 16 projects for which we are requesting authorization.

The first of these is the small submarine reactor test facility in an amount of $10 million. This would be the prototype of the small submarine reactor, the SRS.

It would be built by Combustion Engineering, which is the contractor on this project, and the estimate is based purely on trying to make a guess as to what it would cost, looking at the cost of the SAR and the STR, which we have built in the past, and hoping to get some economies.

Mr. VAN ZANDT. Where is it going to be located?

Mr. DAVIS. We haven't finally settled that yet. It is possible it might be built at the laboratory that Combustion Engineering is building at Windsor, Conn.

Mr. HOLIFIELD. What is the use of this? Is this something that you are moving along toward this carrier?

Mr. DAVIS. This is for a small submarine.

Mr. HOLIFIELD. A very small submarine?

Mr. DAVIS. Small 100 type submarine.

Mr. VAN ZANDT. Is this something like the *Albacore*?

Mr. DAVIS. This would probably be in a vessel somewhat similar to the *Albacore*, but still probably somewhat smaller.

Mr. HOLIFIELD. This is course would be a completely different design than the North American one they are building at Santa Susana?

Mr. DAVIS. This would be a pressurized water-type reactor.

Mr. HOLIFIELD. There is a central power station type?

Mr. DAVIS. There is a sodium graphite central power station.

Mr. HOLIFIELD. All right.

Mr. FIELDS. The next project is for authorization for the aircraft propulsion reactor program. This is for a ground test facility in area No. 2 at Idaho. These facilities are needed for the support of the development work under way in the Pratt & Whitney program. It is contemplated that this will be located at the National Reactor Testing Station at Arco, Idaho. You will recall last year that we requested money and there has been going forward construction of test facilities in area No. 1 out there for the GE ANP effort.

Mr. HOLIFIELD. You are going to do with this just what you did with the *Nautilus*—install a test plant out there——

Mr. FIELDS. This has a different aspect. We do install some reactors out there in conjunction with this. It is a much more complex arrangement than the *Nautilus*.

Mr. VAN ZANDT. Is this related to the recent Air Force announcement of activities at Arco?

Mr. DAVIS. I think that concerned a flight test at Arco which is a part of area No. 1.

Mr. FIELDS. We are constructing for the Air Force an airstrip there. What is that to cost?

Mr. DAVIS. About $10 million for the runway and auxiliary facilities.

Mr. FIELDS. The next item is for the modifications for area No. 1 in the amount of $15 million. This is for facilities there in conjunction with the GE test area in Arco.

The next three items on which we have submitted to you a change and a consolidation——

Mr. COLE. On Arco, can you give us a rough estimate of your total investment at that station?

Mr. FIELDS. Do you have that, Mr. Burrows?

Mr. BURROWS. As of June 30, 1955, $83 million.

Mr. VAN ZANDT. How much?

Mr. BURROWS. $83 million.

Mr. FIELDS. Does that include the *Nautilus* installation and the chemical processing plant?

Mr. BURROWS. Somewhere on the order of $150 million as of June 30, 1955, adding in the prototype of the STR.

Mr. COLE. With the addition of the $70 million that you propose here, it would be nearly $220 million.

Mr. FIELDS. The next facility is an expended core handling and service facility at the National Reactor Testing Station in an amount of $4,750,000. This facility is for the receipt, storage, and examination of the spent cores from water-cooled reactors. It would take the cores apart, disassemble them as much as possible and ship the fuel back for fabrication. There is a need to study these expended cores to see what happens to them. Water pits, shielded cells, and largely special equipment offering the radiation protection necessary in dealing with such materials would be provided.

The next item is food irradiation reactor in the amount of $3 million. We have proposed this after consultation with the Quartermaster Corps of the Army. It is proposed to build a reactor which would be used to irradiate foods to determine how much you can extend the life of food and alleviate storage problems by this method of food preservation. I don't believe we know where this facility would be built at the present time, but it would be used in conjunction with the Army's radiation program which looks toward what can be done by the irradiation of foods on an industrial basis. What is the payoff in it? This project would help very much in getting such information.

Mr. COLE. What are the possibilities as to where it might be located?

Mr. DAVIS. I don't know that I can speak very definitely. We are working with the Quartermaster Corps and they are planning to install some facilities along with this as part of their program. We

feel that an area where there are a lot of agricultural activities would be the logical place to do this.

Mr. COLE. I would think the logical place to do it is at a place where the Government has an established reactor testing station. I don't see where it is advisable to have this food irradiation reactor located in centers where there are large quantities of food.

Mr. DAVIS. You have some problems in connection with Idaho although we have not excluded Idaho. There is the problem of getting the various kinds of food there without preserving them beforehand.

Mr. COLE. When you reach a point of finding a reactor that can be commercialized in irradiating foods then of course those should be located in centers of food supply. But since this is purely a research reactor——

Mr. DAVIS. This is intended to process about 30 tons of food a day, which goes quite a bit beyond purely research.

Mr. COLE. Then I misunderstood.

Mr. VAN ZANDT. We had some testimony presented here several weeks ago that led me to believe they wanted to use it for purposes other than irradiating foods.

Mr. COLE. What would those other purposes be?

Mr. DAVIS. I am not sure what those other purposes are.

Mr. VAN ZANDT. Taking care of fungi in leather and clothing and so forth. In other words, the Army had other uses.

Mr. DAVIS. They have other programs in other parts of the Quartermaster Corps.

Mr. VAN ZANDT. We questioned the thinking of the Army on the basis that they would have to locate in the vicinity of where this food is. After several questions they finally revealed they had other uses, so it is not going to be used only in the field of food irradiation——

Mr. DAVIS. It can be used for any kind of irradiation processing at a fairly high rate. It requires a separate reactor—a reactor of this size—because it is intended to process materials at a fairly high rate.

Mr. VAN ZANDT. They also told us that Public Health would have some usage of it and also other agencies of government. So it wasn't solely an Army project for the irradiation of food, but somewhat of a general project for the Government.

Mr. HOLIFIELD. I am for it. Let's go.

Mr. FIELDS. The next project is the project Sherwood facilities in the amount of $2 million. This is really a contingency item in that I don't believe we have any specific indication at the moment as to what we would need the facilities for. But that project is developing, as you know, and we believe that we should have authority here to provide the facilities that might be necessary to go forward with any of the proposals or specific devices that the laboratories find are needed during the fiscal year.

The next item is the Argonne low power reactor in an amount of $1,225,000. This is for the construction of a prototype of about 1½ megawatts of heat capacity, to provide both space heat and 125 kilowatts of electricity. It would be a boiling water reactor built by Argonne. It is primarily intended for use in places like the Arctic or on DEW line stations. In this $1,225,000 is the electrical generating equipment that would be associated with the reactor.

The next item is the materials testing reactor hot cell extension in the amount of $310,000. This is needed to enlarge the MTR cell building. It would provide a lightly shielded hot cell which could take some of the load off the large cell that they need for the heavy work in order to really expand the usefulness of the materials testing reactor.

The next item is the addition to electrical power facilities at the National Reactor Testing Station in the amount of $3,800,000. This involves the construction of transmission facilities in order to increase the power brought into the area by the amount of 100,000 kilowatts of capacity. Also included in this project is an increase in the capacity of the internal line within the test site—and making this line include a loop so that if any of the line breaks, it can still supply the facilities dependent upon it. This line would be connected with the ANP facilities. (See appendix, p. 35, for further justification of this item.)

The next item is the chemistry cave for radioactive materials at Argonne National Laboratory in the amount of $800,000. This would be for separation process research with respect to plutonium and involves construction of 2 cells, of which 1 would handle up to 10,000 curies of plutonium, and the other which would handle something like 10 curies. They need these cells to handle radioactive materials in this massive amount, as I understand it, in chemical processing research that is going on there now. We are greatly interested because we do feel eventually plutonium is going to become a major factor in the power-reactor program. This is the one, Mr. Chairman, we couldn't start because it was estimated at $448,000 last year in our authorization request and turned out to be $800,000, so we were unable to move forward with that.

The next item is $533,000 for transient housing facilities at the Argonne National Laboratory. At the present time they have a small facility there that has five bedrooms in it. Associated with it are 2 cottages which, I believe, have 2 bedrooms each.

Mr. VAN ZANDT. Is that the comfortable lodge they have out there?

Mr. FIELDS. It is very comfortable, yes sir; but there are only five bedrooms.

Mr. VAN ZANDT. What was its former use?

Mr. FIELDS. I think it had been someone's home or estate. We are proposing to build a facility here of 60 single rooms and 18 double rooms which would provide space for something like 180 or more people. It is a requirement because scientists of the participating institutions in the Argonne program who come in for 3 months or longer have great difficulty in locating. I don't know the extent to which this shortage has hampered participation, or if it has, but we think providing onsite capacity for transients at the Argonne Laboratory would materially assist our program.

Mr. NORRIS. Isn't it true that one of the reasons which has been given by universities who were trying to get accelerators elsewhere, that one of the reasons they were giving for having it elsewhere, is that the facilities at Argonne were inadequate. This would help meet that.

Mr. FIELDS. I have never heard it in that context.

Commissioner LIBBY. The whole question of participation, as the general says, has been somewhat hampered. Brookhaven and Oak Ridge have facilities. True, they are perhaps little more than bar-

racks but at least there is a bed some place so you can stay. That is the function of this. It bears not only on the participating institution program in basic research, but also in the reactor program, I believe, because people do come there for that purpose.

Mr. VAN ZANDT. You are far away from Chicago and also a good distance from Joliet.

Mr. FIELDS. Yes, sir.

The next item is the materials testing reactor maintenance shop. This request is based on a desire to consolidate maintenance facilities now carried on in four separate buildings at the National Reactor Testing Station, all associated with that reactor.

The last item is for the purchase of Bettis Field property in an amount of $400,000. We have an investment there in the neighborhood of $20 million, as I recall.

Mr. HOLIFIELD. Where is Bettis Field?

Mr. FIELDS. Near Pittsburgh, sir. This property is under lease at the present time from Westinghouse, which operates the facilities. There are 195 acres there, and I am informed an estimated $20 million has been invested in the facilities that are on that site. We expect to be using that site for many years to come. Under the contract provisions, we can acquire the property from Westinghouse.

Mr. DAVIS. That is correct.

Mr. COLE. From whom?

Mr. FIELDS. Westinghouse.

Mr. COLE. Who has the $20 million invested?

Mr. FIELDS. We have $20 million in it.

Mr. COLE. We have spent $20 million putting bricks and mortar on land that was owned by Westinghouse.

Mr. FIELDS. Yes, sir.

Mr. COLE. Which we can now buy for $400,000?

Mr. FIELDS. Correct. Included in that $400,000 estimate are two hangars and a brick building—a small brick building which Westinghouse owns itself.

Mr. VAN ZANDT. They were there when they bought that field.

Mr. FIELDS. Right.

Mr. VAN ZANDT. This $400,000 will purchase the field; which will give the AEC complete ownership not only of the real estate but of all the buildings including those hangars. Then we will have an AEC installation at Bettis Field, Pittsburgh, with the Westinghouse people functioning as an operator.

Mr. FIELDS. Yes, sir.

Mr. HOLIFIELD. You say this includes two brick hangars. Did they build them or did we build them?

Mr. FIELDS. They were already there. We didn't build them.

Mr. HOLIFIELD. Does it have a runway?

Mr. TAMMARO. May I take that? There is a runway. We built the present building alongside the runway to save building roads.

Mr. HOLIFIELD. Is it usable?

Mr. TAMMARO. No; not as a runway. It is used as a road now.

Mr. VAN ZANDT. You are using the hard surface for a parking lot at the present time. I might say Bettis Field is located close to the old Allegheny County Airport so you have adequate transportation.

Mr. HOLIFIELD. That is about $20,000 an acre, isn't it?

Mr. FIELDS. It is 195 acres, about $2,000, but the buildings are included.

Mr. HOLIFIELD. That is an industrial area anyway, isn't it? $2,000 an acre isn't too expensive for industrial land. I know there are acres in the Los Angeles area selling around $17,000 to $20,000 for industrial land.

Mr. COLE. What did you start to say?

Mr. FIELDS. I started to say if we could not agree with them on actual price, we have the option of acquiring it from them at the price they paid for it less depreciation at 3 percent per year. I don't have the amount they paid for it; do you?

Mr. BURROWS. The acquisition cost, as I recall, was around $490,000.

Mr. VAN ZANDT. Is that their actual cost?

Mr. BURROWS. That is my understanding.

If you figure 200 acres, the actual cost of the land is $240,000.

Mr. HOLIFIELD. The rest is for buildings.

Mr. VAN ZANDT. Are they willing to sell?

Mr. BURROWS. We have an option, sir.

Mr. FIELDS. That concludes the items under the Division of Reactor Development.

The next group includes 11 items under the Division of Research. The first of these items is the high-energy accelerator in an amount of $15 million. This past fall the Commission determined that the research in high-energy physics should be increased. This is a result of recent developments, including the discovery of the antiproton. The Commission decided that support of the construction of high-energy accelerators and research development of new ones should be increased, and from that decision came a program in which the Commission is supporting the development by the Midwestern University Research Association of a very-high-energy accelerator; that is, supporting design and development work on accelerator concepts looking toward the construction of a machine some years in the future which will outdo any of the machines then in existence.

In addition, the Commission felt that high-energy physics research in the energy region of 10 to 12 billion electron volts, the region in which the antiproton was discovered, offered great promise and that, therefore, there should be constructed as quickly as possible a machine that would handle research in this region. Accordingly we have requested here authority for an additional machine which would be built at Argonne and be in operation perhaps in a period of 4 to 5 years. It would be a 10- to 12-billion electron-volt proton accelerator, an energy region which seems to offer great promise for high-energy physics research.

Mr. HOLIFIELD. Where will this be located?

Mr. FIELDS. Present plans are that it will be located at Argonne. We have had under discussion with Argonne for some time the question of whether they would undertake the machine and what it would look like. Our latest advice is that they are looking very favorably on it and do intend to proceed on this project. We haven't actually authorized it because we are requesting authorization here. They have been authorized to begin development work though.

Mr. HOLIFIELD. Is this going to be the circular type?

Dr. JOHNSON. It would be a circular machine for protons—about 200 feet in diameter contained in a trench.

Mr. HOLIFIELD. How will it compare with the one at Berkeley?

Dr. JOHNSON. It will be about twice as large as that, twice as high in energy, but actually the weight of the steel in it will be less because of improvements in design in the meantime.

Mr. COLE. What is the difference between the big machine and this?

Commissioner LIBBY. The big machine is to be built later and is to take over——

Mr. COLE. This is the forerunner of the big machine?

Commissioner LIBBY. This is to hold forth and furnish facilities for experiments in this field during the time the big machine—well, frankly, Mr. Cole, to get down to brass tacks, the thing we saw in Geneva, which the Russians showed us, is exactly in the energy range in which we think this is going to operate. And when their machine starts the Russians are going to take over the show for several years.

It began in this way. There was a strong disposition to make Argonne a center of activity similar to what we have at Brookhaven and Oak Ridge.

Mr. COLE. Strong disposition—by whom?

Commissioner LIBBY. The Commission. For one reason or another—there is a long history—this laboratory didn't have—well, we had quite a lot of activity with the participating institutions just a month or so ago. We had a very interesting conference under the aegis of this organization on the uses of isotopes in agriculture which was very fruitful and very helpful. In general, however, we don't have the versatility and strength in this program that we have at Brookhaven and at Oak Ridge.

Mr. COLE. Let's go on down through the list.

Mr. HOLIFIELD. Let's go through the list and we can come back.

Commissioner LIBBY. On this accelerator the particular aim is to get the lead back from the Russians as quickly as we can. It isn't only a matter of competition with the Russians. We know that the new and important things in nuclear physics lie in this range. We know that and we want to get those discoveries as soon as possible and draw on the skills and techniques involved in making those discoveries. At the present time we have only 2 machines, the 1 at Berkeley and the 3 billion electron volt machine at Brookhaven. These, of course, are leading the whole world at the moment and we have a real corner on things, but we won't have it very long.

Mr. VAN ZANDT. What is the span of time there that the Russians will enjoy leadership?

Commissioner LIBBY. The best we can do, I think, is to cut it down to 2 or 3 years.

Mr. VAN ZANDT. 2 or 3 years.

Commissioner LIBBY. Whatever we do, and it depends on the breaks, even then. I am afraid they have got the jump on us a little bit. I am afraid that is it. They were very quiet about that machine. The first I ever heard of it was at the Geneva Conference.

Mr. COLE. I recall your concern, Dr. Libby, and I am curious to know if you have verified their claims to the point that there isn't any doubt in your mind that their claim was based on fact?

Commissioner LIBBY. There is no doubt in my mind, but it is an interesting fact——

Mr. FIELDS. I would now like to take three items which are closely related to each other. They all have to do with the University of California Radiation Laboratory: the bevatron research facilities, conversion of accelerator design building, and the engineering service building. The bevatron, as you know, is now in operation. There is a definite need to expand the area for experimental work at the bevatron building, to house some auxiliary services, and to be able to take care of the bubble chamber which has recently been put into operation there. Some increased shielding is also required. The experimental work will also be helped by the plan to convert the accelerator design building to an assembly area and place for staging the experiments that they do with the bevatron. Then they require additional space for engineering service personnel, part of whom are now housed in the facilities to be converted. All three projects are thus tied together.

The first item in the amount of $1,084,000 is to expand the experimental area in the bevatron building and provide related auxiliary services. The plan for conversion of the accelerator design building is to take a part of the existing office-type building and make it a high-bay shop and an assembly area for experiments that go on in the bevatron. The engineering service building in the amount of $1,080,000 is for the construction of 55,000 square feet of building to house engineering service functions. There are presently in the accelerator design building something like 31,000 square feet occupied by engineering service personnel. They also occupy an additional 25,000 square feet in scattered temporary buildings. Construction of the engineering service building is therefore needed in part to house people displaced from the accelerator design building, and in part to take care of those people now working in scattered and inadequate barracks-type buildings.

There is an item for a 43-inch heavy particle cyclotron at Oak Ridge National Laboratory in an amount of $459,000. I will ask Dr. Johnson, who knows more about the accelerators, to tell you about this.

Dr. JOHNSON. This is to enable scientists to accelerate things like the carbon nuclei or the nitrogen nuclei up to energies of somewhere around 80 million volts; and to explore the reactions that take place between these nuclei when such energies are reached. They have been carrying on experiments up to now with another cyclotron which is at a lower energy, and are finding some extremely interesting phenomena which bear directly upon questions of vital interest to the Commission.

There are also 2 facilities having somewhat related objectives under construction: 1 at Berkeley and 1 at Yale University. These will accelerate similar heavy ions to higher energies and will enable scientists to study interactions between such nuclei and the very heaviest isotopes in the periodic table. This Oak Ridge machine will not reach the heaviest isotopes, but it fills a gap in this important field. It will permit reactions to be studied which cannot be produced in any other machine now available or planned.

Mr. FIELDS. The next item is in the amount of $5,780,000 for permanent research buildings at Oak Ridge National Laboratory. This laboratory, as you know, has been in operation since the war. The personnel that would go into this 178,500 square foot building are now in 13 different temporary buildings that are scattered around the Oak Ridge National Laboratory site. These 13 buildings are inadequate and uneconomical. I think they occupy a total square footage at the present time of 165,000 square feet. The new space would be two wings, as I understand it, to their main laboratory——

Dr. JOHNSON. Two stories each.

Mr. FIELDS. This addition to the main laboratory would be known as the east research building. It represents the major part of the cost. There would also be an addition to the instrument laboratory building. We believe this project will result in savings in maintenance and operating costs. It will certainly be a marked improvement. In the original 1949 plan for permanent buildings at the Oak Ridge National Laboratory we visualized 1,800 personnel and this estimate has grown to 3,400.

Mr. VAN ZANDT. This will displace the old, wooden, two-story barracks type?

Mr. FIELDS. Yes, it will do that.

We have proposed a number of facilities for the Brookhaven National Laboratory, looking toward making this a definitely permanent laboratory. I might say that in my personal opinion these national laboratories are the first team in this effort, and will continue to be for some time in these atoms-for-peace programs. What we visualize here is to provide them with the types of facilities we think they need to undertake their great task.

The first is the physics building. The present physics department at Brookhaven is located in seven temporary buildings. These are also old and rather inadequate. For that reason we contemplate the construction of a building which is tied to the cosmotron complex and in which the physics department would be housed.

The engineering building at Brookhaven is the next facility we are requesting in an amount of $1,879,000. This would be built in conjunction with the present hot laboratory, as I understand it, and would provide space for some chemistry laboratory, engineering lab and shops area, drafting, classified library, and such facilities.

There is also an item for cosmotron target area at Brookhaven in an amount of $350,000. This is an extension of the present cosmotron experimental area involving the building of some 60,000 square feet of additional work space. Its primary purpose is to enable the full utilization of the cosmotron that is there.

The next item is for the building for the 18-inch cyclotron which is at Brookhaven. It has been operated in temporary facilities while we were assembling it and testing it and really getting experience in its use to see what we should house it in to get the full use out of it. Now they think they know what is required and would propose a target. This project includes a target room and a room for the cyclotron itself, as well as an equipment room and assembly area.

At the University of California we are requesting $200,000 to build an addition to the heavy ion accelerator building. This would provide a chemistry laboratory and physics laboratory and a staging area for that machine. In particular they feel a requirement for this

because in the heavy ion work they deal with the very heavy elements which are extremely short lived. They find they need to work just as closely as they can to the machine, as I understand it, in order to get maximum results from their research on these very minute quantities.

There is one further item for Brookhaven and that is the reclamation facility and hot laundry. This project would provide buildings and equipment to deal with contaminated materials which have been handled on a rather makeshift basis by Brookhaven up to this point. The volume of contaminated materials is getting greater and we feel it now justifies the construction of such a facility to house these activities.

The last item is a general plant project item in the amount of $21 million. This item is for the miscellaneous minor alterations, additions, modifications, replacements, and minor new construction required for all of the facilities in the Atomic Energy Commission. We have a plant investment, as you recall, of something on the order of $7 billion, and this provision would authorize the miscellaneous minor construction and modifications that are inherent in any large production complex.

Last year the authorization in this—do you recall the amount, Mr. Burrows?

Mr. HOLIFIELD. $17,845.000. You have it on the back page.

Mr. FIELDS. I have $17,900,000, or roughly thereabouts, and you allowed a percentage. Our current estimate is about 6 percent greater, or roughly $19 million for fiscal year 1956 in order to meet our needs. We have made our request for fiscal year 1957 in the amount of $21 million.

Mr. HOLIFIELD. Thank you, General, and your staff for this presentation.

We will adjourn subject to the call of the chairman in the event it is necessary to call you back.

(Whereupon the meeting was adjourned at 4:37 p. m., Friday, February 17, 1956, subject to the call of the chairman.)

AUTHORIZING LEGISLATION[1]

TUESDAY, MARCH 27, 1956[2]

CONGRESS OF THE UNITED STATES,
JOINT COMMITTEE ON ATOMIC ENERGY,
Washington, D. C.

The Joint Committee met, pursuant to call, at 2:05 p. m., in the committee room, the Capitol, Hon. Clinton P. Anderson (chairman of the committee) presiding.

Present: Senators Anderson (presiding), Pastore, Hickenlooper; Representatives Holifield, Price, Kilday, Dempsey, Van Zandt, and Patterson.

Representing the Atomic Energy Commission: Willard F. Libby, Commissioner; K. E. Fields, General Manager; William Mitchell, General Counsel; E. J. Bloch, Director of Production; Oscar S. Smith, Director of Organization and Personnel; Gen. Alfred D. Starbird, Director of Military Application; Don S. Burrows, Controller; Francis J. McCarthy, Assistant Controller for Budgets; Charles A. Perry, Congressional Liaison Officer.

Committee staff: Wayne Brobeck, Frank Cotter, George A. Norris, Jr.

Chairman ANDERSON. The committee will come to order.

Dr. Libby, we are happy to have you here. Are you ready to start?

Mr. LIBBY. The General Manager will present a statement on the authorization bill first, if that meets with your pleasure, Senator.

Chairman ANDERSON. Very well.

Mr. FIELDS. On March 22, 1956, the Commission, in a letter addressed to the chairman of this committee, requested inclusion in the construction authorization bill for the fiscal year 1957 of three additional items. The inclusion of these items would bring the total of the 1957 authorization program to $295,495,000. We understand that the committee would like to talk particularly to these additional projects this afternoon. We hope that the committee will include them in the authorization bill.

Looking at the request for additional authorization, the first item is the expansion of certain production facilities at a cost of $20.9 million. We first learned of this requirement last fall. However, the scope of the facilities which would be needed and especially the timing of the construction to meet our schedules, could not then be firmed up. However, it was indicated that we would need to start construction shortly.

---

[1] The following hearings were held in executive session, since much of the testimony justifying the various items contained restricted data. As is the usual practice of the joint committee, the transcripts of these hearings have been edited and all testimony which contains restricted data has been deleted.

[2] This was a meeting of the full committee for purposes of reporting out a committee-originated bill authorizing the appropriation. During this hearing two new projects were presented which were not discussed during the earlier subcommittee meeting on February 17, 1956.

In the interval, the scope of the project and its timing have been firmed up and we therefore can meet our schedule if construction can be initiated on July 1. This can be done by including this item in the 1957 authorization bill.

The second project, providing for additional weapons assembly facilities at a total estimated cost of some $15 million, is also an item, the need for which had been apparent for some months. The scope of the project and its cost could not be tied down before and we felt that, if these became urgent, we could make some provision for them out of the weapons contingency item, which is included in the 1957 authorization bill. Further detailed study of this requirement indicates that, because of safety and security requirements, the construction will be much more extensive than was originally indicated. Whereas initially the project had been thought of in terms of a relatively small cost, the present scope and cost of the project dictate the need for presenting it as a separate line item.

The third project, additional elementary school classrooms at Los Alamos costing roughly $200,000, is due, I am afraid, to the fact that community planning at Los Alamos was, in this instance, not in phase with the budget cycle. We knew of a potential need in late December but did not have essential data needed to define requirements. Subsequently a survey has definitely demonstrated the need for these additional classrooms to meet increased enrollments in the fall of 1957. We could have met the need by the conversion of some temporary facilities at a cost of about $50,000, plus the purchase of 2 or 3 buses. However, this conversion would only have been a postponement. Since proceeding now will save these costs, we have come before you at this late date with this project which, though relatively small in money terms, is very important to the Los Alamos community.

The only remaining opening remark I would like to make, sir, is that we have not yet appeared before the Appropriations Committee. If it is possible that an authorization bill could be passed before we did, it would certainly be helpful to have them look at our overall budget. You recall last year we went up on two separate occasions.

Chairman ANDERSON. Are there any questions?

Representative HOLIFIELD. Of course, this is new to me. We did not have this in the hearings.

Mr. FIELDS. Yes, sir.

Could I make a few other remarks now on the two principal projects?

(Discussion off the record.)

Representative HOLIFIELD. As long as we are on this authorization bill, I would like to have Mr. Norris bring up a matter of wording in this proposed bill which he has brought to may attention. That is the proposed draft of the atuhorization bill.

Mr. NORRIS. Last year when the authorization bill came up from the Commission it was worded about the way this bill is worded, and before it left the committee it was revised in order to have those items which are deemed to be facilities under the Atomic Energy Act be called "facilities" and those items which are not facilities under the Atomic Energy Act be called by other language.

I have quickly run through this bill in order to make a parallel change this year. The items specifically are 103 (a) 3 which is handling system; (a) 4 would be reactor facility safety improve-

ment; (a) 5, disposal systems; (a) 6, charging and discharging equipment; (a) 7, modifications to existing production facilities; (a) 8, chemical processing facility. On page 2, 57–2–13, renovation of service plant. That is not a reactor or production facility that you are talking about there. (b) 2, weapons assembly plant; (b) 3, weapons production and development plant; (c) 1, aircraft nuclear propulsion ground test plant. It is not a reactor, it is the shop you are concerned about; (c) 2, test plant; (c) 5, on page 3, would be core handling and service plants; (c) 6, food irridation facility because it is a reactor utilization facility; (c) 7, project Sherwood plant, because your definition of facility excludes fusion; (c) 8, Argonne low power reactor facility; (d) 2, bevatron research plant. On page 4, (f) 3, project 57–f–3, high explosive and weaponizing plant; 57–f–6, manufacturing support plant; 57–g–1, addition to electrical powerplants; 57–g–3, transient housing. Page 5, project 57–i–1, reclamation plant.

I do not believe these affect your accounting in any way.

Representative HOLIFIELD. Is there any reason why we should not change those terms to comply with last year's legislation?

Mr. FIELDS. I am not sure I understand the point here. Do you follow it, Mr. Mitchell?

Mr. MITCHELL. I think what Mr. Norris is referring to is the language of section 261 which refers to plant or facility, and the effort, as I understand, is to differentiate between the two.

Mr. NORRIS. That is right, and clarify where it is facility whether production or utilization; label that "plant" or some other language. This is what we did last year.

Mr. FIELDS. I see no objection to this at the moment.

Representative HOLIFIELD. Do you see any objection, Mr. Mitchell?

Mr. MITCHELL. No sir, I do not know of any.

Representative HOLIFIELD. We will change those words then to comply with last year's legislation.

That is all I have.

(Discussion off the record.)

Mr. FIELDS. We understand we were here for the discussion of these three items and you did want an executive session following that.

Representative HOLIFIELD. That is right. You see, Mr. Chairman, these three particular items which they brought up today were not presented to the subcommittee and we were ready to make up the bill. I thought it would be good to have the justification for that to the full committee and then the full committee could go ahead with the same knowledge we had rather than have them come up twice and consider this.

(Whereupon at 2:30 p. m., Tuesday, March 27, 1956, the committee proceeded to discuss other business.)

APPENDIX

UNITED STATES ATOMIC ENERGY COMMISSION,
Washington 25, D. C., March 10, 1956.

HON. CLINTON P. ANDERSON,
Chairman, Joint Committee on Atomic Energy,
Congress of the United States.

DEAR SENATOR ANDERSON: There is included in the Atomic Energy Commission's proposed authorization bill for fiscal year 1957, presently being considered by your committee, a project, additions to electrical power facilities, National Reactor Testing Station (57–g–1), to provide for increasing the electrical power available to the National Reactor Testing Station at Idaho from 20,000 kilowatts to the 120,000 kilowattt which is considered necessary to meet the needs of the expanded program planned for that area.

Since submission of our request, a survey has been conducted by Gibbs & Hill, electrical power consultants, which discloses that the original plan for achieving the increased power, namely, by increasing the existing 20,000 kilowatt Goshen line to a 60,000 kilowatt capacity and the addition of a single 60,000 kilowatt line from American Falls, is not feasible. This survey indicates that the additional power capacity should be effected in two phases as set forth below:

Phase 1, fiscal year 1957: Increase the Goshen line capacity from 20,000 to 40,000 kilowatts. (Since it is expected that this will be done by the utilities company serving the area at no cost to the Government, it has been excluded from the project.) Construct one 40,000 kilowattt line from American Falls with necessary terminal facilities and construct internal National Reactor Testing Station lines and facilities from the central facilities to the special power excursion reactor test-organic moderator reactor experiment area and to the aircraft nuclear propulsion site.

Phase 2, fiscal year 1958: Construct a second 40,000 kilowatt line from American Falls and a 40,000 kilowatt line from the central facilities to the aircraft nuclear propulsion site, both with necessary terminal facilities, to complete the National Reactor Testing Station power loop system.

The additional power lines and facilities encompassed in this project, together with the Goshen line increased capacity will provide the necessary 120,000 kilowatt level required for the National Reactor Testing Station.

The estimated cost for accomplishing phase 1 as outlined above amounts to $3.8 million, the sum included in our proposed authorization bill. It will be noted, therefore, that the scope of the project as presently envisaged under the $3.8 million, namely 60,000 kilowatts of additional capacity, is significantly different from the scope outlined in the justifications before your committee for this project, i. e., 100,000 kilowatts of additional capacity. Therefore, we should like to formally amend the scope of this project to that covered under phase 1 above. Accordingly, there is attached a revision to the analysis of the bill setting out in detail this revised scope.

It is contemplated that authorization for phase 2 will be requested in the Atomic Energy Commission's fiscal year 1958 authorization bill.

Sincerely yours,

R. W. COOK,
Acting General Manager.

57–g–1. Addition to Electrical Power Facilities, National Reactor Testing Station, Phase I, $3,800,000

This project will provide additions to the electrical power transmission facilities of the National Reactor Testing Station (NRTS) required to meet the increase in power demands anticipated for fiscal years 1957–59.

The present electrical contract provides for 20,000 kilowatt electrical power for the NRTS area and projects. Additional requirements through 1960 are

estimated at 100,000 kilowatts. In order to handle the load and insure reliability of supply to the aircraft nuclear propulsion and other NRTS areas, it is essential that additional sources of supply to the NRTS be provided and that the capacity of the present internal NRTS transmission system be expanded.

Total transmission capacity of the present transmission line from Goshen to the NRTS is limited to 40,000 kilowatts which makes it necessary to bring in an additional source. The construction of 2 transmission lines, of 40,000 kilowatts capacity each, from American Falls to the NRTS will provide the required source. It is planned to construct these two lines and essential intra-NRTS transmission lines and facilities in two separate phases as follows:

Phase I: Increase the present NRTS capacity to 80,000 kilowatts to meet requirements through fiscal year 1959. This phase of the project encompasses the following:

(*a*) Increase the Goshen line capacity from 20,000 to 40,000 kilowatts. (Since it is expected that this will be done by the utilities company serving the area at no cost to the Government, it has been excluded from the project.)

(*b*) Construct one 40,000 kilowatt line from American Falls with necessary terminal facilities.

(*c*) Construct internal NRTS lines and facilities from the central facilities to the special power excursion reactor test-organic moderator reactor experiment area and to the aircraft nuclear propulsion site.

Phase II: It is contemplated that authorization for this phase which will raise the NRTS capacity from 80,000 kilowatts to 120,000 kilowatts to meet the requirements through fiscal year 1960 will be requested in fiscal year 1958. This phase of the project will include the following:

(*a*) Construct a second 40,000 kilowatt line from American Falls with necessary terminal facilities.

(*b*) Construct an internal NRTS line from the central facilities to the aircraft nuclear propulsion site with necessary terminal facilities to complete the NRTS power loop system.

×